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RESPONSIVE LOGISTICS
(MOVEMENT MUST REPLACE MASS)

BY

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**RESPONSIVE LOGISTICS
(Movement must Replace Mass)**

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ABSTRACT

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This study asserts that DOD's wholesale logistics systems are not designed for and do not provide responsive logistics support to warfighting CINCs. Conditioned to accept long order-ship-times (OST), warfighters have historically compensated for this lack of responsiveness by relying on massive buildups of supply inventories in theater and at intermediate staging bases. This supply buildup strategy has proven successful and has been institutionalized in Joint and Service doctrines. Both warfighters and logisticians are comfortable with a logistics system based on mass inventories. The paper argues that a downsized DOD can no longer afford, either financially or from a combat readiness perspective, to continue to use mass to compensate for a lack of system responsiveness. Both warfighters and logisticians need to shift their paradigm from logistics based on mass to a concept that relies on total visibility over a responsive reliable flow.

BACKGROUND

Conditioned to long order-ship-times (OST) and minimal information on the status or location of requested items, most warfighters accept the service they are provided by the Department of Defense's wholesale logistics distribution system with stoic resignation. They cope with logistics like severely adverse weather. They accept it as an unalterable part of their environment and try to compensate for its troublesome effects by planning for the worst.

Historically, warfighters have compensated for the lack of logistic system responsiveness by relying on massive buildups of forward supply inventories. They acquiesced to an expensive and cumbersome logistics system based on mass for three reasons, first, because it was all most had known; second, because they believe that changing it was not very possible and finally, because, despite its crudeness, they believed that "it gets the job done."¹

Logistics based on mass is like bombing or shelling based on mass. Both "get the job done," because both rely on an ever increasing level of effort to improve the probability of delivery to the intended target. They differ in the degree to which their performance is perceived as good enough.

The accuracy and range of munitions are rarely accepted as good enough. Emerging technologies have consistently been applied to improving the precision delivery of munitions to enemy targets because there is a widely held perception that improvement is both possible and worth the investment. The distribution of logistics, has not benefited from these positive perceptions. Just the opposite is true. Resignation to unresponsiveness is institutionalized. It is reflected in both logistical and

operational planning doctrines. The current logistics system has been made “good enough” by doctrine designed to compensate for its shortcomings.

Instead of spurring improvements, logistics system deficiencies justify the status quo. Because the current logistics distribution system lacks the capability to provide responsive precision delivery of required items, some argue that it is too risky to attempt change to a system that does. The belief that “Just-In-Time” logistics support is “Just-Too-Late”² for military purposes is self-reinforcing. Modernization of logistics systems is not normally a high resource priority with the services, particularly when resources overall are scarce. A major reason resources are scarce is because of the expense of supporting mass inventories and mass inventories are required because the logistics system is unresponsive.

Considering this lack of expectation for logistic system improvement (even among logisticians), rationalizations for logistic system modernization are commonly espoused only in terms of dollar savings. Cost cutting arguments, not the warfighting benefits of a responsive logistics distribution system are used to justify investments. The DoD’s logistics distribution system has therefore been locked into a self-fulfilling equilibrium at low level – little improvement in overall system performance is ever expected and little improvement is ever achieved. Change under these circumstances is virtually impossible. Yet change must occur to face the realities of today and tomorrow.

NO LONGER A CHOICE.

A decision to change the logistics distribution system of the Department of Defense because it is better to have an agile, responsive system is no longer a discretionary option. Change is being dictated external realities. The Department of Defense can no

longer afford the wasteful luxury of a “level of effort” logistics system supporting its increasingly high technology but numerically reduce weapons platforms.

Challenged by the competing realities of reduced budget authority and increasingly frequent and diverse operational requirements, the DoD is awakening to need for a fundamental reorientation of its largest and most costly institutional element. According to Mr. Paul G. Kaminski, Under Secretary of Defense (Acquisition and Technology):

"The end of the Cold War requires the DoD logistics system to make adjustments to support a smaller, highly mobile, high technology force. The pressure of fiscal limits, combined with the demands of regional conflicts, humanitarian support, and other non-traditional missions, all put a premium on logistics *performance and flexibility*. Logistics in the 1990s faces its greatest challenge: to re-engineer itself to support modern warfare with a precise, agile response, instead of mass. The Department has a small margin in time and manpower to mobilize, to deter, or fight and defeat an enemy. Lacking modern management information systems (MIS), the (Service) Components are trapped into the old paradigm of buying, holding, repairing and moving a massive logistics presence to prevent support failure.³

The need Mr. Kaminski describes is a need for an organization managed for response. A response-oriented organization measures its success, not in transactions processed, tonnage shipped, inventory reduced or even dollars saved but in its ability to respond to its customer's rapidly changing current and future needs.

Because the environment of the customer is uncertain and constantly changing there are no productivity formulas, as there have been in the past, that will have lasting effect on system responsiveness. The application of modern technologies to functional segments of the logistics pipeline will achieve focused efficiencies but there is no guarantee that these efficiencies will enhance (or even avoid hindering) overall system responsiveness. Commercial experience shows that: “Sustainable success is a result of response. When we become responsive we will be successful.”⁴ Inventory

reductions and cost savings occur as by-products of an improvement in responsiveness.⁵

The global challenges of free trade and shifting competitive advantages have forced commercial activities to experiment with a myriad of modern business practices and applied technologies. Practices like Just-In-Time inventory management, and technologies such as electronic data interchange (EDI) are no longer innovations. They are now standard information age business practices.

Adopting information age techniques and technologies enabled some commercial firms such as "Wal-Mart" and "Caterpillar" to be models of commercial success.⁶ They enabled others like "Motorola" and "Federal Express" to change the way the world works. But adopting the latest business technology and techniques will not, by themselves guarantee success. They are only tools to achieve an objective.

IT'S THE "OBJECTIVE"

"The problem is not the inventory. The problem is why the inventory is there. Inventory always reflects an inability to respond."⁷

Steve Levit, Quality is Just the Beginning

The objective of the organization will determine how the tools are applied and ultimately the productiveness of the investment in the modernized tools. When the objective is increased ability to respond to ever changing customer needs, commercial success stories abound.⁸ When cost cutting and inventory reductions are the end goals themselves, a continuing downward spiral of failure and frustration often follows despite the investment.⁹

While the Department of Defense's logistics entities do not, for the most part, have to compete for customers, the dynamics of their interaction with those served is very similar to the commercial world. Each entity is part of a larger interdependent system.

Behaviors of customers and the responses of the servicing organization can complement each other or they can frustrate each other's efforts toward system improvement. Responsiveness begets customer confidence and customer confidence frees the logistics system of the burden of self-defeating customer coping behaviors.

Even though it may have been the immediate challenge of budget constraints that got the attention of the Department of Defense's senior leadership, only an enduring commitment to providing responsive logistics in support of unit level readiness will lead to the most rational and productive application of new technologies and commercial business practices.

"Achieving world-class capabilities, while reducing the cost of DoD's logistics system, is the principle challenge."¹⁰ A DoD retreat to a near term fix, focused on short-term goals like inventory reduction and the realization of cost savings, will jeopardize this opportunity to create a truly responsive logistics system. A commitment to provide responsive logistics support as precise and agile as the forces being supported must remain the prime objective.

WHAT IS RESPONSIVE LOGISTICS SUPPORT?

The ability to respond is measured in time.¹¹ A logistics system must be able to respond within a limited amount of time. It must be able to respond to end user needs with speed and precision accuracy. A responsive logistic support concept must focus on providing a timely flow of individually important items to those who need them. The ability to deliver mass tonnage is not unimportant, however, depositing a mountain of materiel in theater, even doing it rapidly, does not constitute logistic success. The success of a logistics system is ultimately defined by one criterion – the time it takes to provide each operator with the exact item which that particular operator needs.

A responsive logistics system delivers with precision. It delivers the right materiel, in the right quantity, to the right place, at the right time, every time. Secretary of Defense William J. Perry reinforced this notion of responsiveness. While addressing the fiscal rationale for drastically downsizing the infrastructure associated with delivering support, Secretary Perry emphasized that "In making management improvements, the Department will not lose sight of the prime reason for having a distribution system -- to give military combat units the equipment and support services they need when they need them."¹²

PROVIDING FOR COMBAT UNIT NEEDS

As Secretary Perry said, the reason we have a military distribution system is to give combat units what they need when they need it. Before continuing, the following question must be answered. Does the current logistics system give units what they need when they need it?

Operations Desert Shield/ Storm (ODS) and Restore Hope(Somalia) provide prime case studies of the DoD's performance under current doctrine and procedures. In 1990 the DoD had \$109.9 billion supply inventory on-hand.¹³ During ODS 3.9 million tons of this inventory arrived in Southwest Asia as sustaining supplies.¹⁴ The total tonnage delivered to Saudi Arabia during Operations Desert Shield and Desert Storm exceeded that delivered to France during and six months after the Normandy invasion by almost 200%.¹⁵ But, despite the total amount of materiel delivered and the size of the theater build up of on-hand stocks (DOS-Days-Of-Supply), after action studies show that combat units did not get what they determined they needed when they needed it. "Supplies were lost to the system, sometimes for months. Resupply of spare

parts was ineffective. Equipment was deadlined, and some units received only minimal parts support.”¹⁶

The focus on building up stocks (60 DOS) created congestion and backlogs throughout the system.¹⁷ Of the 40,000 containers shipped to ODS, for example, 25,000 (62.5%)¹⁸ had to be opened just to determine their contents and destination. Many of these were never unloaded and redeployed just as they arrived.

Overloading the logistics system with shipment of just-in-case tonnage precluded some deployed forces from receiving high priority items they needed until after the tide of battle had rendered the need for those items superfluous. Along with wasting strategic lift capacity, just-in-case stocks were in direct competition with high priority unit requisitioned items (10,700 per day at peak)¹⁹ for the attention of material handlers and managers to sort, document and forward. “Resupply was so poor that at least one major (Army) unit did not receive resupply for a single piece of deadlined armor through regular wholesale supply channels for the duration of its deployment.”²⁰

Order-ship-times actually lengthened throughout ODS.²¹ Items requested by units using the highest priority designator (64.9 % of total)²² took an average of 28 days just to reach the port of embarkation (POE) for shipment out of CONUS.²³ The average time for all requested materiel, regardless of the source or priority, to reach POE during ODS was 50.9 days.²⁴ This was clearly not being responsive to unit needs.

Operations in Somalia perhaps provide a better example of the type of smaller operations to be supported in the future. During Operation Restore Hope it took an average of 16 days for a high priority repair part requisitioned by a unit in Somalia to leave CONUS on a strategic lift asset.²⁵ Other shipments of repair parts to fill requisitions outside CONUS during the same period as the Somalia operation took an

average of 36 days from time of order until departure from CONUS POE. This suggests an effort to provide priority service to the Somalia operation.²⁶

Despite the priority support to the forces in Somalia and the improvement over ODS, the reality is that, again, the current logistics system did not give units what they needed when they needed it. Response time, just for the CONUS segment, exceeded the Secretary of Defense's FY 98 total response time goal by almost two weeks.

DOCTRINE BASED ON COPING BEHAVIOR

So why have warfighters on the receiving end of an unresponsive system accepted logistics based on mass in place of precision? One answer is because they learned to cope with it. As Mr. Joshua Gotbaum, former secretary of defense for economic security put it "The business of the warfighter is to be sure he's prepared for any eventuality and so the first instinct is to say, 'I want backup. I want redundancy.' "²⁷

Warfighters have routinely compensated for the system's lack of responsiveness (and their lack of confidence in it) by relying on coping behaviors. On the strategic level they sought to maintain a force structure large enough to allow for large unit replacements and war reserve stocks sufficient to conduct force regeneration. On the operational level they relied on massive buildups of supply inventories on a "Just-In-Case" basis as a buffer against erratic resupply. And individual units resorted to ordering and hoarding excessive quantities of items that "might" be needed. Coping behaviors of this type have a long history. Peter Senge in The Fifth Discipline points out that "Today's problems come from yesterday's solutions"²⁸ This is truly the case with our logistics doctrine.

Our basic concept of logistics has not changed significantly since the beginning of the industrial age. In 1996 we continue to perpetuate logistics doctrine rooted in the

early eighteenth century. It is a doctrine designed to overcome the inability of a sailing ship and horse drawn distribution system to be responsive. Early industrial age planners needed and used the forward depot stockpile as a pragmatic workaround solution to problem of bulk transport²⁹

Without instant communications or rapid transportation available to them, eighteenth century planners had no choice but to buildup forward depots – wagon load by wagon load. Ever since, our mental energies have gone toward seeking efficiencies in bulk transport and stockpile methodology. Today's reality is that commercial business technology has overcome both the transportation and communications limitations of yesteryear, yet we in the DoD have not fully availed ourselves of them.

Our current logistics system was developed in a period when transportation was far more expensive than the materiel being transported. It is still based on this assumption. However, just the opposite is true today. Over the past 30 years, the cost of transportation has fallen precipitously while the cost of materiel has skyrocketed. An aircraft engine today costs almost 250% and a missile 300% more (in constant dollars) than they did in the 1960's while international air and sea cargo shipment rates have declined over 100%. ³⁰

As we move into the twenty-first century the continuing expansion in the importance of unique, often high cost, high tech items critical to sustaining our warfighting advantages will force us to abandon the mass stockpile. As of February 1996, the DoD has classified and tracks 6,853,917 unique items.³¹ Pushing some bulk quantity of each item to a theater of operations on a just-in-case basis is no longer a practicable solution. High cost, high priority items will have to be distributed globally from a central CONUS base.

Doctrine should guide the technological and procedural change to a CONUS logistics base concept. Instead current doctrine continues to recommend large buildups of supplies in theater. A keyword search of the “Joint Electronic Library” for the words— supply and buildup; DOS (days-of-supply); level-of-effort; or stockpile -- will quickly demonstrate how embedded a large buildup still is in current doctrine. Joint Pub 5-03.2 (Joint Operations Planning and Execution System Vol. II) as well as Service publications specifically state 30 DOS on hand as a minimum planning requirement.

Again, ODS provides a practical example of adherence to current doctrine. During Desert Shield, CINCCENT directed that the stockage level for food and ammunition be increased from to 60 Days of Supply.³² By the time of the cease-fire, theater reserve stockpiles had been built up to approximately 25 Days of Supply (DOS) of food (not counting Host Nation stocks) and a 66 day supply of ammunition.³³ The stocks remaining at cease-fire, for instance, included enough 120-mm tank main gun rounds (based on actual expenditure rates) for over 200 days.³⁴ There were actually enough tank main gun rounds in theater to destroy every Iraqi tank and other armored vehicle multiple times without the assistance of sister services or other branches of the Army.³⁵ The bill for this doctrinal theater stockage policy was paid by units who did not receive responsive support. The future consequences are even more significant. The resource pool available in 1990 is gone. The special resource circumstances that made the massive supply buildup possible no longer exist.

RESOURCE REALITIES

"The sinews of war, a limitless supply of money."

Cicero (106-43 BC)

Although economic resource realities are not the only, and in my opinion not even the best, rationale for readjusting our concepts of logistics support, they are the most immediately compelling. Except for personnel costs, the budget is essentially consumed for logistic expenditures. DoD wide, over 60 percent of a typical weapon system's life cycle costs are accounted for by Operating and Support costs.³⁶ To avoid hollowing of the force; reducing force structure below viable levels; or freezing modernization efforts leading to a loss of technological superiority over potential adversaries; the DoD must adjust its current logistics business practices to economic realities.

Total budget authority has been declining steadily since the end of the Cold War. DoD's slice of total federal outlays has dropped from 25.8 percent in 1989 to 16.9 percent in 1995.³⁷ Whatever the out year numbers end up finally being, it is reasonably certain that they will not be increasing. The cost of providing support must be reduced at least in proportion with force structure reductions and further if the services are to recoup current shortfalls in weapon system replacement funding.

All services must live within their budget authority and that means tradeoffs. GEN. Dennis Reimer, Army Chief of Staff, in an interview shortly after assuming his current position, outlined the options, "Some people say the only way the Army can pay for modernization is to reduce force structure. I certainly recognize that as a viable alternative."³⁸ But unwilling to accept force structure cuts as the only alternative GEN

Reimer went on to explained that he was looking for efficiencies in logistic systems to pay for modernization.

In the DoD, logistics is where the money is. It is a large high volume, high dollar business. An average of more than 6.1 million supply transactions worth over \$120 million are processed by wholesale supply activities every day.³⁹ Operations and Support (O&S) costs are the single largest non-personnel related expense in the DoD budget. During 1995 O&S accounted for 94.4 billion dollars out a total budget authority of 252.6 billion dollars.⁴⁰ DoD's inventories in the past decade swelled from \$43 billion in 1980 to \$109 billion in 1990, yet operational readiness rates and logistic response times were effectively unchanged.⁴¹ The logistics "pipeline" is the great drainpipe for the DoD's funds.

The logistics pipeline must be brought under control. The United States' ability to afford the modern force structure its strategy requires depends on bringing that pipeline under control. Bringing the pipeline under control does not mean just decreasing overhead; decreasing infrastructure and decreasing cost. It means increasing visibility of assets; increasing flexibility and agility; and it means increasing total system responsiveness.

Transitioning to a response oriented logistics system will be more difficult in this time of reduced total budget authority but it must viewed as the essential "pump priming" first step that it is. Lack of responsiveness is a fiscal drain on all activities. It increases the cost of providing support and detracts from operational readiness. DoD logistics processes, the component segments of the entire logistics pipeline are in critical need of improvement both by segment and overall.⁴²

The first step is to establish high standards. Even the DoD's most exacting time standards (9 days to Europe) allow almost three times more days for distribution than Caterpillar Corp., a commercial firm that fills 80,000 orders across the globe every day.⁴³ "Caterpillar Corp. meets its emergency orders within 48 hours (to customer or port) and its routine orders within a week."⁴⁴

The DoD under the best conditions, a peacetime (CONUS) environment, does not meet its own relaxed standards. Average Logistic Response Times (LRT) for in stock items at wholesale depots often exceed 30 days and may take up to 75 days.⁴⁵ Compounding the readiness/responsiveness problem is the fact that the system's performance is totally unpredictable. Even the priority of a requisition seems to have minimal effect on predicting an item's eventual arrival.⁴⁶

Despite some localized successes in improving the performance of certain segments of the logistic pipeline since the formation of a DoD Logistics Response Time (LRT) Process Action Team in 1994, (one DLA depot reduced processing times by 12 days and two other depots cut their time in half)⁴⁷ DoD's LRTs remain well off target.

Third Quarter FY 95 Average Logistics Response Times are as follow:

AVERAGE LOGISTICS RESPONSE TIMES⁴⁸

ARMY - 30 DAYS	USAF - 13 DAYS
NAVY - 24 DAYS	USMC - 32 DAYS

These peacetime average logistics response times have a direct dollar cost. The less responsive the logistics system, the longer the order-ship-time. The longer the order-ship-time, the more inventory is required to fill the pipeline and the longer the pipeline the higher the cost.

Each day of increased average order-ship-time at peacetime operating levels of activity, for instance, costs the Army approximately \$30 million; the Navy \$59 million;

and the Air Force \$73 million.⁴⁹ That means that on any particular day, the United States military has approximately \$2.9 billion of inventory is considered consumed and being replaced by wholesale supply activities but not in the hands of units who need it.⁵⁰ That is \$2.9 billion of inventory that must be maintained in excess of real requirements just to fill the pipeline because of its lack of responsiveness.

The logistics pipeline needs to be shortened. It must be shortened to better manage resources; to increase the daily readiness of a reduced force structure; and to be able to respond to the operational realities of a changed world.

REALITIES OF A CHANGED WORLD

The ongoing revolutions in military affairs will make quick small scale deployments the norm. The circumstances under which these forces will be employed required agile and responsive logistics support. A buildup period for theater supply stocks is unlikely.

Deployments for peacekeeping, humanitarian, or localized combat operations will require the rapid employment of swiftly tailored and immediately effective joint task forces. These forces will come from a much smaller force structure.

Reduced force structure and smaller force deployments enhance the importance of every weapons system and platform. Daily readiness of key weapon systems at unit level will take on a national level significance not previously seen. .

While in the past logisticians succeeded in maintaining high readiness rates for deployed forces despite an unresponsive distribution system, the special circumstances that enabled them to do so no longer exist. Besides seemingly limitless supplies of

money, large force structures in the past enabled the services to choose only their most ready units for mission deployment.

Because of this depth in force structure, not all elements of the same type had to be engaged in an operation. This allowed the uncommitted elements to be used as sources for spares or even as a source for complete major end items. Force structures for some capabilities are already too small to meet existing requirements and marginally adequate for most others. Stripping one part of a force to support another is no longer an option.

The smaller size of the combatant elements deployed will also require a smaller response based logistics structure. A guiding principle of the DoD Logistics Strategic Plan is that the "... footprint of logistics support must be reduced substantially without reducing readiness."⁵¹ This principle primarily refers to the institutional infrastructure but can be applied equally to theater level support structures for deployed forces.

The requirement to deploy large numbers of service support personnel to manage forward base inventories for relatively small operational forces will be unacceptable. Units deployed for limited profile missions will have to rely on the DoD's global distribution pipeline for sustainment and replenishment. Reduced overseas bases will also increase direct reliance on CONUS facilities.

Both warfighters and logisticians need to adjust to these realities of a changed world. The buildup of "Just-In-Case" inventory is no longer a viable alternative. A support concept that relies on instantaneous information exchange, global asset visibility, and precision delivery of specific items is more conducive to the current state of the world. Adjustment at the highest levels has already begun. Acceptance of both the economic and military realities of a changed world has led to a top driven call for a change in the way DoD conducts its logistics business.

TOP DRIVEN CHANGE (AN INITIAL PLAN)

In 1994, the Department of Defense Logistics Strategic Plan established the mission statement for the DoD's logistics system. "To provide responsive support to ensure readiness and sustainability for the Total Force in both peace and war."⁵² Further, it said that "Successful logistics performance at the national level will be measured in terms of its responsiveness to unit readiness at the operating level; and logistics processes must be improved to ensure responsiveness at that level"⁵³

The inclusion of the word "responsive" and its application to the DoD's entire logistics structure represents a pivotal change in philosophy. Striving to be responsive to the needs of individual combat units has always been the goal of the service component's tactical and operational logistics structures but had not previously been used a measure of the DoD's overall logistics system success.

According to the "Logistics Strategic Plan," the DoD will gauge success by measuring response times. Logistics Response Time (LRT) will be the criterion used to measure response times. The process that begins with the identification of a requirement or need and ends when the customer accepts delivery. LRT data will include total elapsed time and segment times between issuance of a customer order and satisfaction of that order. Measurement will begin with the Julian date of the customer requisition and end with close-out of the requisition in the continental United States (CONUS) or receipt at the Port of Embarkation (POE) for outside the continental United States (OCONUS).⁵⁴ With the publication of the 1994 Logistics Strategic Plan, DoD, for the first time ever, set specific performance standards for total logistic system

responsiveness. The goal to be achieved by FY 98 is: (to) achieve a 72-hour delivery (i.e., one-day supply processing and two-day transportation delivery) from time of release of customer order until receipt at an installation in CONUS or POE for OCONUS shipment.⁵⁵ Intermediate and subsequent planning goals for LRT are as follow:

Logistics Response Time Goals.⁵⁶

The quantitative goals for planning purposes⁵⁷ are:

- By September 1995 – Achieve a maximum 15 day logistics response time in CONUS.
- By September 1996 – Achieve maximum 5 day logistics response time in CONUS.
- By September 1998 – Achieve a 72-hour logistics response time (i.e., one-day supply processing and two-day transportation delivery).

By October 2001 – reduce the average backorder age for backordered items to 30 days.

Saying that the mission is to provide "responsive" support from the wholesale level and measuring success at the using unit level signifies more than "support the fighting forces" rhetoric. It is a clarion call for a sea change in U.S. military logistics.

This call from the Secretary of Defense must become a programming and budgeting priority for the Services. Investing in change is no longer just a good idea. The DoD is hemorrhaging dollars in excessive Operations and Support (O&S) costs daily. The Department previous reluctance to demand, and the Services reluctance to jointly invest in, a seamless responsive DoD logistics support structure has not only made investing in it now more costly but also more urgent. An aging, less capable, and probably smaller force with O&S costs taking a growing percentage of the budget will

be the result of not aggressively pursuing a change to a responsive oriented logistics structure.

CONDITIONS FOR RESPONSIVE LOGISTICS

Every day that the DoD's logistics system remains unresponsive makes the challenges mentioned above more difficult to overcome. Yet, the DoD cannot just decide to become logically responsive to its forces overnight. Senior leader proclamations of support for change are a good start but real change requires more. Total system visibility of assets, assured data communications for passing logistics information and a seamless logistics information management network are the prerequisites to make a reliance on response rather than massive in-theater inventories possible.

To achieve the specified in the Logistics Strategic Plan, the DoD needs to build a new foundation on two cornerstones. First, Total Asset Visibility (TAV), the technological enabler for a responsive logistics network must become a reality. And simultaneously, a general shift in our existing concept of logistics, the industrial age paradigm enshrined in our doctrine, must be modified to accept the logistic realities of the information age.

TOTAL ASSET VISIBILITY

Total Asset Visibility is defined as "The capability that permits operational and logistics managers to determine and act on the timely and accurate information about the location, quantity, condition, movement and status of DoD materiel. It includes

assets that are instorage, inprocess, and intransit.”⁵⁸ TAV is an outcome of logistics automation integration. The goal of TAV is to facilitate the free flow and sharing of information among all service and DoD logistic automation systems.

Total Asset Visibility (TAV), is the technological enabler for a responsive logistics network. Total Asset Visibility through EDI (Electronic Data Interchange - The computer to computer exchange of data from common business documents using standard data formats) is the technological foundation that makes responsive logistics support a possibility. TAV must provide near real-time visibility down to the requisition number; national stock number (NSN); and unit identification code (UIC) in every segment of the logistics pipeline. It must be seamless throughout the logistics community, integrating Service as well as Joint supply and transport systems. TAV must provide operators with sufficient management level detail to identify and divert enroute shipments. Without TAV those who support the status quo for our current doctrine of supply buildups and level-of-effort logistics are correct. Without TAV Just-In-Time delivery of required items is Just-Too-Risky for operational military purposes.

The good news is that TAV is not radical out of the box thinking. It is not too hard or too complicated to achieve. The commercial successes in global overnight delivery systems and intercontinental Just-In-Time inventory management systems are based on the same common element – shared real-time information. A seamless information management network with standardized data elements is the enabler that makes these business practices and the businesses themselves viable.

TAV requires no more than a commitment to modernize and standardized logistic information management. The outlook for the DoD to implement TAV is positive. The fact that implementation of TAV for retail asset visibility and distribution; implementation

of Corporate Information Management (CIM) migration; expansion of Electronic Data Interchange/Economic Commerce; and implementation of Intransit Visibility (ITV) are all specifically targeted priority strategies of the DoD's Logistics Strategic Plan add the Department level visibility required to ensure support.

A joint organization, known as the Defense Total Asset Visibility (DTAV) office has been established and resourced (\$77M over five years) to integrate Service TAV efforts.⁵⁹ Migration standard systems have been selected and the initial operating capabilities of the Defense Standard System(DSS) are in operation at the Defense Information System Agency (DISA) megacenters.

USTRANSCOM, as the lead for intransit portion of TAV, has completed and published the "Defense Intransit Visibility Integration Plan" and is on track to achieve an initial operational capability for the Global Transportation Network (GTN) by November of 1996. The Marine Corps Supply base at Albany, Ga. is about to complete operational testing of the Materiel Management Standard System (MMSS) for supply depots. And the Army is currently using Automated Identification Technology (AIT) and Radio Frequency Transponders along with the Navy developed and operated Defense Transportation Tracking System (DTTS - satellite monitoring) to track individually requisitioned items intransit to forces in Bosnia/Herzegovina. While much of the data required for these exchanges are still processed in the batch mode, significant movements toward integrated near real time asset visibility have and continue to occur. Progress in expanding TAV has had the additional benefit of benchmarking segments of the logistics pipeline for process improvement programs like the Army's Velocity Management initiative. Ongoing process improvement programs have already reduced logistic response times.

CONCLUSION

Ultimately the greatest challenge in establishing a responsive logistics system is in modifying the way we think about and therefore plan and conduct logistic operations.

Mr. Paul Kaminski, Under Secretary of Defense for Acquisition and Technology came to the same conclusion, "All our experience told us we needed a 'just-in-case' inventory system. We now need to move more in the direction of a just-in-time system."⁶⁰

Significant cultural changes are required to accomplish this. Positions held on the methodology for change, whether change is possible, and even whether there is a need for change, are more often based on our tradition and experiences than today's existing possibilities. A re-education and broad acceptance of current realities are a prerequisite for progress. Dismissing an information based logistics system as too risky is an emotional response that cannot be supported by the evidence.

We need to accept the today's realities. The reality that deploying a mountain of materiel does not provide combat units with what they need, when they need it. The reality that resource constraints will no longer allow warfighters to rely on traditional coping behaviors as buffers against an unresponsive logistics system. The reality that an unresponsive logistic system is putting current and future readiness, modernization and combat capability at risk. The reality that the operational environment in a changed world requires reliance on an agile global distribution network. And finally, accepting the reality that information age technology has made change possible. The right materiel, in the right quantity, can be delivered to the right place, at the right time, anywhere on the globe. "Change will result when we recognize that we are capable of doing better than we are currently doing."⁶¹

¹ N.Y. Moore; J.M. Halliday; K. Beam; D. McIver; M. Lewis; F. Finnegan; and T. Masselink "Materiel Distribution: Improving Support to Army Operations in Peace and War," RAND, DRR-440-A, November 1993. p. 1.

² Michael L. McGee, "Just-In-Time", or Just-Too-Late" Army Logistician, Mar-Apr 94., p. 15-17.

³ Paul Kaminski, Deputy Secretary of Defense (Logistics), Department of Defense Logistics Strategic Plan, 1994 p. 1.

⁴ Steve Levit, Quality is Just the Beginning, (New York: McGraw-Hill Inc., 1994) p.1-4.

⁵ Ibid. , p. 116-117.

⁶ Ibid. , p. 106.

⁷ Ibid. , p. 90-91.

⁸ John Dumond, Rick Eden, John Folkeson, Velocity Management. (Santa Monica, Rand, 1994) p.13-14.

⁹ Steve Levit, Quality is Just the Beginning, p. 143.

¹⁰ Office of the Deputy Under Secretary of Defense (Logistics), Department of Defense Logistics Strategic Plan, 1995. p.8.

¹¹ Steve Levit, Quality is Just the Beginning, p. 68.

¹² Office of the Secretary of Defense, Annual Report to the President and the Congress. February 1995 p.139

¹³ U.S. Congress. Senate. Committee on Appropriations. Defense Inventory: DoD Needs to Continue to Improve Management and Reduce Stocks. GAO/NSIAD-92-11. 19 February 1992. p.1.

¹⁴ U.S. Department of Defense, Final Report to Congress - Conduct of the Persian Gulf War. p. 411-412.

¹⁵ Center of Military History, Logistics in World War II - Final Report of Army Service Forces, (Washington. D.C., GPO) p.43.

¹⁶ N.Y. Moore; J.M. Halliday; K. Beam; D. McIver; M. Lewis; F. Finnegan; and T. Masselink "Materiel Distribution: Improving Support to Army Operations in Peace and War," RAND, DRR-440-A, November 1993. p. xi.

¹⁷ U.S. Department of Defense, Final Report to Congress - Conduct of the Persian Gulf War. p. 406-409.

¹⁸ Office of the Deputy Under Secretary of Defense (Logistics), Defense Intransit Visibility Integration Plan, February 1995. p. iii.

¹⁹ U.S. Department of Defense, Final Report to Congress - Conduct of the Persian Gulf War. p.397.

²⁰ N.Y. Moore; J.M. Halliday; K. Beam; D. McIver; M. Lewis; F. Finnegan; and T. Masselink "Materiel Distribution: Improving Support to Army Operations in Peace and War," RAND, DRR-440-A, November 1993. p.2-3.

²¹ Ibid , p.31.

²² U.S. Department of Defense, Final Report to Congress - Conduct of the Persian Gulf War. p.397.

²³ N.Y. Moore; J.M. Halliday; K. Beam; D. McIver; M. Lewis; F. Finnegan; and T. Masselink "Materiel Distribution: Improving Support to Army Operations in Peace and War," Ibid., p.19, 23.

²⁴ Ibid., p. 20.

²⁵ Ibid. ,p. 21-22.

²⁶ Ibid. , p. 22.

²⁷ Katherine Barrett, and Richard Greene, "DOD Logistics –We really don't know." Financial World, 24 October 1995, 56.

²⁸ Peter M. Senge, The Fifth Discipline: The Art and Practice of the Learning Organization. (New York: Doubleday,1990) p. 57.

²⁹ Martin Van Creveld, Supplying War. (Cambridge: Cambridge Unvisersity Press,1977) p.17-26. Explains the development of the Magazine system.

³⁰ John Dumond, Rick Eden, John Folkeson, Velocity Management. p.8.

³¹ Defense Logistics Services Center, "Federal Catalog System Overview" .December 1995.

³² U.S. Department of Defense, Final Report to Congress - Conduct of the Persian Gulf War. p.406.

³³ William G. Pagonis,LTG USA, "Command Report Operation Desert Shield, 22d Support Command." Memorandum for Commanding General ARCENT. Saudi Arabia, [1991]. p.3.

³⁴ U.S. Department of Defense, Final Report to Congress - Conduct of the Persian Gulf War, April 1992. p.408. 220,000 120-mm tank rounds were on hand. 3,600 were fire.

³⁵ Ibid., p. 9. "Iraqi ground forces had 5000 main battle tanks, 5000 armored infantry vehicles, and 3000 artillery pieces."

³⁶ Office of the Deputy Under Secretary of Defense (Logistics), Department of Defense Logistics Strategic Plan, 1995. p.1.

³⁷ Office of the Secretary of Defense, Annual Report to the President and the Congress. February 1995 p. B-3.

³⁸ Dennis Reimer,GEN, USA "Shaping the Army of the Future" interview by Tom Philpott, The Retired Officer Magazine, December 1995 p.44.

³⁹ Office of the Secretary of Defense, Annual Report to the President and the Congress. February 1995 p.143

⁴⁰ Ibid. , p. B-1.

⁴¹ U.S. Congress. Senate. Committee on Governmental Affairs. Organizational Culture - Use of training to Help Change DOD Inventory Management Culture. GAO/NSIAD-94-193. August 1994. p.1-3.

⁴² Office of the Deputy Under Secretary of Defense (Logistics), Department of Defense Logistics Strategic Plan, 1995. p.13.

⁴³ N.Y. Moore; J.M. Halliday; K. Beam; D. McIver; M. Lewis; F. Finnegan; and T. Masselink "Materiel Distribution: Improving Support to Army Operations in Peace and War," RAND, DRR-440-A, November 1993. p.27-31.

⁴⁴ Ibid. , p.xiii.

⁴⁵ K.Girardini; W.Lewis; and E. Gardner "Measuring Order and Ship Time for Requisitions Filled by Wholesale Supply," RAND, DRR-1085-A, July 1995. p. 8.

⁴⁶ Ibid. , p.6-7.

⁴⁷ Office of the Deputy Under Secretary of Defense (Logistics), Department of Defense Logistics Strategic Plan, 1995. p.9

⁴⁸ Walter Atchley, Office of the Deputy Under Secretary of Defense (Logistics), Logistics Response Time Process Action Team - Progress Briefing, 19 October 1995. Slide 3.

⁴⁹ Ibid. , slide 18. Dollar costs of inventory in the logistics pipeline vary on a daily basis and are also effected by seasonal events such as War Reserve Stock maintenance cycles.

⁵⁰ Ibid. , slide 18. table. Total cost of a day of inventory for each service multiplied by LRT days in excess SECDEF 72hr goal..

⁵¹ Office of the Deputy Under Secretary of Defense (Logistics), Department of Defense Logistics Strategic Plan, 1995. p.5.

⁵² Office of the Deputy Under Secretary of Defense (Logistics), Department of Defense Logistics Strategic Plan, 1994. p. 3.

⁵³ *Ibid.* , p. 4

⁵⁴ *Ibid.* , p.9.

⁵⁵ *Ibid.* , p.7

⁵⁶ Office of the Deputy Under Secretary of Defense (Logistics), Department of Defense Logistics Strategic Plan, 1995. p.13.

⁵⁷ The Logistics Strategic Plan's goals are caveated as follows: "These goals apply to customer orders at unit level which cannot be filled at that level. The following qualifications apply: (1) The goals are limited to non-bulk materiel (i.e., repair parts, other consumables and reparables) and in-stock items; (2) the September 1998 goals for on-post requisition submission, excluding local maintenance, is .5 days, and elimination of on-post distribution time to customers through direct delivery to the appropriate supply support organization, by October 2001; (3) coordinated, scheduled delivery service on a minimum five business day cycle will be an acceptable as an alternative to a two-day transportation delivery; and (4) Other exceptions to these goals may be approved by DUSD/L if determined to be impractical for certain materiel."

⁵⁸ Office of the Deputy Under Secretary of Defense (Logistics), Defense Intransit Visibility Integration Plan, February 1995. p.B-3.

⁵⁹ Doris Russ, LTC USA, (russdj@acq.osd.mil) "Resourcing Total Asset Visibility." Electronic mail message to Robert Hauser (hauserr@carlisle-emh2.army.mil), 2 April 1996.

⁶⁰ "DoD Logistics - We really don't know." Financial Weekly, 24 October 1995 p.56.

⁶¹ Levit, Quality is Just the Beginning, p.76.

Bibliography

Armed Forces Staff College, The Joint Staff Officer's Guide, AFSC PUB 1, 1993.

Atchley, Walter (watchley@acq.osd.mil), "Logistics Response Time/Strategic Plan" Electronic mail message to Robert Hauser (hauserr@carlisle-emh2.army.mil), 8 March 1996.

Atchley, Walter Office of the Deputy Under Secretary of Defense (Logistics), Logistics Response Time Process Action Team - Progress Briefing, 19 October 1995.

Atkinson, Philip E., Creating Cultural Change: The Key to Successful Total Quality Management. San Diego: Pfeiffer & Co., 1990.

Barnes, Al, and Fleming, Randolph J., "Materiel Release Order Control System" Army Logistician, Nov-Dec '94.

Brickman, James F., and Brown, Michael W., "Big Red 1' Reconstitution" Army Logistician, Mar-Apr '93.

Barrett, Katherine, and Greene Richard, "DOD Logistics -We really don't know." Financial World, 24 October 1995, 56-58.

Center of Military History, Logistics in World War II - Final Report of the Army Service Forces, Washington D.C.: GPO, 1993.

Cleary, Daniel, COL. Briefing to DOD Reengineering Symposium. "Baldridge-based Army Performance Improvement Criteria" October 1995.

Dumond, J.; Eden R.; Folkeson J.; Harrold G.; Horton K.; Lackey A.; Lopez A.; Marullo G.; O'Connor R.; and Parker D. Reengineering the Army's Order and Ship Processes, RAND, DRR-1083-1-A, June 1995.

Dumond J.; Eden R.; and Folkeson J. Velocity Management-An Approach for Improving the Responsiveness and Efficiency of Army Logistics Processes, RAND, 1995.

Folkeson J.; Edwn R.; and Dumond J. Draft Velocity Management Pilot Implementation Plan, RAND, DRR-983-1-A, June 1995.

Girardini K.; Lewis W.; and Gardner E. Measuring Order and Ship Time for Requisitions Filled by Wholesale Supply, RAND, DRR-1085-A, July 1995.

Harrold, Glenn Col, USA, Department of the Army DCSLOG-PLP, telephone interview by author, 30 March 1996.

Headquarters, United States Marine Corps, FMFM 4 Combat Service Support. August 1993.

Jukes, Richard, " Transparent Transfer" Army Logistician, Apr-May '93.

Joint Warfighting Center, Warfighting Vision 2010—A Framework for Change, 1 August 1995.

Klima, Gerald G., "Just-In-Time: Mission Accomplished" Army Logistian, Apr-May '93.

Krantz, Matt. "Is Your Firm's System Project Bound To Fail?" Investor's Business Daily, 27 November 1995, p. A6.

Levit, Steve, Quality is Just The Beginning: Managing for Total Responsiveness. New York: McGraw-Hill, 1994.

McGee, Michael L., "Just-In-Time, or Just Too Late" Army Logistian, Mar-Apr '94.

Mickelson, Roger W., "Principles of Logistics (In Transition to the Information Age)" Army Logistian, May-Jun'95.

Moore N.Y.; Halliday J.M.; Beam K.; McIver D.; Lewis M.; Finnegan F.; and Masselink T. Materiel Distribution: Improving Support to Army Operations in Peace and War, RAND, DRR-440-A, November 1993.

Office of the Secretary of Defense, Annual Report to the President and the Congress, February 1995.

Office of the Deputy Under Secretary of Defense (Logistics), Department of Defense Logistics Strategic Plan, 1994.

Office of the Deputy Under Secretary of Defense (Logistics), Department of Defense Logistics Strategic Plan, 1995.

Office of the Deputy Under Secretary of Defense (Logistics), Defense Intransit Visibility Integration Plan, February 1995.

Owens, William A., ADM. "Four Revolutions in Military Thinking" ROA National Security Report, August 1995.

Pagonis, William G., LTG. "Command Report Operation Desert Shield, 22d Support Command." Memorandum for Commanding General ARCENT. Saudi Arabia, undated.

Pagonis, William G., LTG. "Command Report, 2d Support Command, Operation Desert Storm, 17 January-15 March 1991." Memorandum for Commanding General ARCENT. Saudi Arabia, 27 April 1991.

Pagonis, Williaim G., LTG. and Raugh Harold E. LTC. "Logistics Sustainment of Operation Desert Storm." Military Review, September 1991.

Reichert, Thomas A., "JIT: Tell It Like It Is." Army Logistian, Nov-Dec '94.

Reimer, Dennis, GEN, USA " Shaping the Army of the Future" interview by Tom Philpott, The Retired Officer Magazine, December 1995 p.44.

Robison, Thomas W., MG. "Velocity Management: An Initiative to Improve the Army Logistics System" Army Logistian, May-Jun '95.

Russ, Doris, LTC, USA, (russdj@acq.osd.mil) "Resourcing Total Asset Visibility," electronic mail to Robert Hauser (hauserr@carlisle-emh2.army.mil), 2 April 1996.

Senge, Peter M., The Fifth Discipline: The Art and Practice of the Learning Organization. New York: Doubleday, 1990.

Shands, Donna, and Baralli, Janet, "Primer on the Single Stock Fund" Army Logistian, May-Jun '94.

Skinner, William, Jr. "Total Army Culture-- The Civilian Connection." (Carlisle: U.S. Army War College, 1993).

Sullivan, Julian A., Jr., and Abney, Stephen D., " New Logistics Concepts Tested in Haiti" Army Logistian, May-Jun '95. 28.

Toffler, Alvin and Heidi, War and Anti-War: Survival at the Dawn of the Twenty-first Century. Boston: Little, Brown & Company., 1993.

Tronvold, Jeffrey R., " Maintaining Readiness Through Reduced Inventory" Army Logistian, Nov-Dec '94.

U.S. Army Deputy Chief of Staff for Logistics, Velocity Management--Pilot Implementation Plan-- The Strategy to Reengineer the Army's Logistics Process, 1995.

U.S. Army Logistics Integration Agency, The Army Strategic Logistics Plan, 1995.

U.S. Congress. Senate. Committee on Governmental Affairs. Organizational Culture - Use of training to Help Change DOD Inventory Management Culture, GAO/NSIAD-94-193. August 1994.

U.S. Congress. House. Subcommittee on Readiness, Committee on Armed Services, Army Inventory--Fewer Items Should Be Stocked at the Division Level. GAO/NSIAD-91-218. July 1991.

U.S. Congress. House. Subcommittee on Readiness, Committee on Armed Services. Defense Inventory - Shortcomings in requirements Determination Processes. GAO/NSIAD-91-76. May 1991.

U.S. Congress. House. Subcommittee on Military Readiness, Committee on National Security. DOD Inventory Management and Warehouse Space. GAO/NSIAD-95-64, May 95.

U.S. Department of Defense, Army Inventory -- Current Operating and War Reserve Requirements can be Reduced. GAO/NSIAD -93-119, April 1993.

U.S. Department of Defense, Final Report to Congress - Conduct of the Persian Gulf War. April 1992.

U.S. Department of the Air Force, AF Reg 28-3 Usaf Operations Planning Process. June 1986.

U.S. Department of the Army. Combat Service Support / Theater Army Area Command. September 1984.

U.S. Department of the Navy and U.S. Marine Corps. Naval Doctrine Publication 4 - Naval Logistics. January 1995.

U.S. Joint Chiefs of Staff. Joint Pub 3-02.2 Doctrine for Amphibious Embarkations. April 1993.

U.S. Joint Chiefs of Staff. Joint Pub 4-0 Doctrine for Logistic Support of Joint Operations. January 1995.

U.S. Joint Chiefs of Staff. Joint Pub 5-03.2 Joint Operations Planning and Execution System Vol II. March 1992.

U.S. Senate, Committee on Armed Services, DOD's Efforts to Improve Management and Reduce Stocks Need to Continue. GAO/NSIAD-92-13, FEBRUARY 1992.

Vanairdsdale, Michael J., "Just-in-Time Inventory - Trading Efficiency for Effectiveness" Army Logistian, Mar-Apr '92.

Yeager, Timothy and Estevez, Alan F., "Total Asset Visibility" Army Logistian, May-Jun '91.

Wheatly, William M., "Repair Parts for Contingency Operations" Army Logistian, May-Jun '94.